USSR

UDC: 621.317.784.023(088.8)

PETLYAKOV, Ye. I.

"A Device for Measuring the Energy of an Isolated SHF Pulse"

USSR Author's Certificate No 260692, filed 25 May 68, published 7 May 70 (from RZh-Radiotekhnika, No 11, Nov 70, Abstract No 11A293 P)

Translation: This Author's Certificate introduces a device for measuring the energy of an isolated SHF pulse. The device contains a section of waveguide -- a glass jacket with liquid adsorbent. As a distinguishing feature of the patent, this adsorbent is coupled to a glass measurement tube. An advantage of the proposed device is that it requires no preliminary calibration and can be used for making measurements in absolute energy or power units. E. L.

1/1

USSR

UDC 621.378.1:621.391.822

IL'INSKIY, YU.A., PETNIKOVA, V.M.

"On The Noise Of Infrared Radiation Detectors With Frequency Conversion"

Kvantovaya elektronika (Quantum Electronics), Moscow, No 5(11), pp 124-126

Abstract: A promising method for detection of infrared radiation is conversion of the frequency of this radiation with the aid of a nonlinear crystal. If the frequency of pumping is ω_1, and the signal frequency is ω_2 then it is possible to obtain the sum or difference of the frequency $\omega_1 \pm \omega_2$, which lies in the region of sensitivity of detectors of the visible or near infrared band. The problem of the sensitivity of such a detection method is important. The sensitivity is determined by the conversion factor and the noise of the device. The present paper studies and evaluates the principal noise in frequency converters: 1) Thermal, 2) Background, and 3) The noise of parametric luminescence. On the basis of the fluctuation--dissipation theorem and equations of the field in the crystal, expressions are obtained for the power of the noise caused by the thermal fluctuations of the medium and background radiation. This noise is compared with the noise resulting from the spontaneous process of parametric luminescence. It is established that in the near infrared band the noise of parametric luminescence predominates, and the middle and far bands thermal and background noise

1/2

USSR

IL'INSKIY, YU. A., et al., Kvantovaya elektronika, No 5(11), pp 124-126

prevail (if measures for their reduction by cooling are not taken). The authors thank D. N. Klyshko for discussion of the work. 3 ref. Received by editors, 4 May 1972.

2/2

1/2 012 UNCLASSIFIED PROCESSING DATE--27NOV70

TITLE--NICKEL NITRATE PRODUCTION -U-

AUTHOR-(05)-PETRACHKOV, E.A., KARLOV, V.P., SHERSHNEV, N.G., SERGUNKIN, V.N., CHERNYAVSKAYA, L.A.

COUNTRY OF INFO--USSR

SOURCE--U.S.S.R. 264,380

REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI NR 1970

DATE PUBLISHED--03MAR70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CHEMICAL PATENT, NICKEL COMPOUND, NITRATE, CRYSTALLIZATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3001/1450 STEP NO--UR/0482/70/000/000/0000/0000

CIRC ACCESSION NO--AA0126981

UNCLASSIFIED

2/2 012 UNCLASSIFIED

CIRC ACCESSION NO--AA0126981 PROCESSING DATE--27NOV70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. NI NITRATE IS PREPD. WITHOUT THE FORMATION OF AN NH SUB4 NO SUB3 BYPRODUCT BY DISSOLVING METALLIC NI IN HNO SUB3 CONTG. 700-1000 G-L. NI(NO SUB3) SUB2. 6H SUB2 O IN THE PRESENCE OF 20-70 G-L. NH SUB4 NO SUB3 IN THE FORM OF A MOTHER LIQUOR OBTAINED AFTER EVAPN. AND CRYSTN. OF NI NITRATE.

UNCLASSIFIED

USSR

PETRAK, L. V.

"Program for Approximate Realization of the Best Even Approximation of a Function"

Programmy optimiz. Priblizheniye Funktsiy. Vyp. 3 [Optimization Programs. Approximation of Functions. No 3 -- Collection of Works], Sverdlovsk, 1972, pp 3-10 (Translated from Referativnyy Zhurnal - Kibernetika, No 8, 1973, Abstract No 8 V654)

Translation: This program is designed to solve the problem of best approximation of functions of several variables by "generalized" polynomials such as $F_n = \sum_{i=1}^{n} a_i \phi_i(X)$ in arbitrary set G of points $X=\{x_1, x_2, \ldots, x_i\}$ in 1-dimensional space:

$$E_n = \min_{F_n} \max_{X \in G} \left| f(X) - \sum_{i=1}^{n} a_i \phi_i(X) \right|,$$

where $\phi_i(X)$, i=1,2, ...; n, is a certain linearly independent system of functions.

1/1

USSR

IVAKHNENKO, A. G.; OVCHINNIKOV, V. A.: PETRAKE, G.: GULYAN, N. V. (Kiev)

"Automatic Control of Complex Plants with Prediction Optimization by the Self-Organization Principle"

Kiev, Avtomatika; July-August 1973, pp 39-52

Abstract: In control with prediction optimization each solution is evaluated from the standpoint of its effect on predicting the future.

In this article the problem of the synthesis of optimal control was solved in discrete time. A plant (hydroelectric power station) for which optimal control may be found by means of both dynamic programming and the self-organization principle (selection) was taken as the first example. This made it possible to determine the dependence of the error of the exact solution on the choice of degree of freedom. For $F \geqslant 90$ both methods proved to give close results. In contrast to dynamic programming, the self-organization method is applicable to more complex plants with a greater amount of delaying independent variables and to optimization in a sliding interval of the prediction. A complex stochastic plant for which dynamic programming cannot be applied was taken as the second example.

1/2

USSR

IVAKHNENKO, A. G., et al., Avtomatika; July-August, 1973, pp 39-52

The article includes 22 equations, seven figures, and five tables. There are nine bibliographic references.

PETRAKE, G.

JPRS 55818

27 April 1972

UDC: 62-50.23

A METHOD OF MATHEMATICAL MODELING OF COMPLEX ECOLOGICAL SYSTEMS

[Article by O. G. Ivakhnenko, Yu. V. Koppa, Ye. M. Todua, and G. Petrake; Kiev, Avtomatika, Ukrainian, No 4, 1971, pp 20-34]

Problem Statement for Modeling of the Water Ecological System

Automatic control-computer centers will be created in the near future which will be coupled by means of telemetering systems with sensors operating as control elements of conditions in water reservoirs. Since water reservoirs will be objects of automatic control the mathematical modeling of the ecological system of water reservoirs becomes increasingly necessary.

An attempt is made below to apply to this purpose a new approach of an heuristic self-organization where instead of differential equations particular "polynomial description"). This approach is more adequate for simulation of problems of complicated processes and it is capable of producing not only qualitative but accurate estimates of variables.

Models which were constructed until present are applicable only to a qualitative investigation of processes as it is stated by the authors of these models. For example, in [2] where the best determined model has been described one can read: "Investigation results of the created model of the water ecosystem may be considered only from the qualitative standpoint, more work is necessary in order to obtain valid qualitative data." In contrast to this the authors of the present paper claim that their mathematical model produces in addition to qualitative also valid quantitative estimates.

Accuracy of Simulating Complicated Objects Requires Measured Complexity of Mathematical Description

There is a definite inconsistency between the complexity of mathematical simulation and the simplicity of the apparatus utilized for this purpose. Until present the simulation was performed either by determined methods (based on investigation of simple differential equation, for example, linear equations of convective diffusion), or statistical methods of ordinary regression

[I - USSR - N]

1/2 024 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--ON THE INVESTIGATION OF TWO NEW QUICK ACTING DEVELOPERS, PHENIDONE AND METHYLPHENIDONE, USED IN SPECTRUM ANALYSIS -U-

AUTHOR-(03)-DIMITROV, G., PETRAKIEV, A., GAGOV, V.

COUNTRY OF INFO--USSR

SOURCE--MASHINOSTROENE, 1970, VOL 19, NR 3, PP 126-128 -23

DATE PUBLISHED-------70

SUBJECT AREAS--METHODS AND EQUIPMENT, PHYSICS

TOPIC TAGS--SPECTRUM ANALYSIS, PHOTOGRAPHIC PROCESSING, ORGANIC AZO COMPOUND, PHOTOGRAPHIC CHEMICAL, HYDROQUINONE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1998/0495 STEP NO--BU/9002/70/019/003/0126/0128

CIRC ACCESSION NO--AP0121169

UNCLASSIFIED

2/2 024 UNCLASSIFIED

CIRC ACCESSION NO--AP0121169 PROCESSING DATE--30OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE DEVELOPING CAPACITIES OF TWO TYPES OF DEVELOPERS, BASED ON PHENIDONE OR METHYLPHENIDONE AND HYDROQUINONE, HAVE BEEN STUDIED. THE RATIO BETWEEN THE COMPONENTS HAS BEEN SELECTED IN SUCH A MANNER THAT THE DEVELOPERS ARE QUICK ACTING, COMPARED WITH THOSE THAT ARE BROADLY USED IN PHOTOGRAPHIC PRACTICE. WHEN USED FOR THE PURPOSES OF SPECTRUM ANALYSIS, THEY PROVIDE GREATER DENSITY OF THE BLACKENING OF THE SPECTRUM LINES. FACILITY: FIZICHESKI FAKULTET NA SOFIYSKIYA UNIVERSITET.

UNCLASSIFIED

USSR

UDC 669.295:620.172.2

PETRAKOV, A. F., KHOREV, A. I., PETROV, L. M., and RUBLEV, YA. A.

"Resistance of Titanium Alloys to Repeated Static Loads"

Moscow, Metallovedeniye i Termicheskaya Obrabotka Metallov, No 4, Apr 73, pp 46-50

Abstract: The effect of depth and hardness of the gas-saturated layer produced during heating for quenching and aging was studied with respect to the resistance of VT6S and VT14 titanium alloys to repeated static loads under uniaxial and biaxial tension. It was found that the gas-saturated layer (0.1 mm deep) on the surface of these alloys somewhat reduces alloy strength and sharply lowers ductility. Removal of the gas-saturated layer by etching to a depth of 0.1 mm for VT6S alloy and 0.5 mm for VT14 increased the service life of samples by 3-4 times under repeated static loads. A study of the rupture kinetics on samples of VT6S during repeated static loads showed that the gas-saturated layer mainly affects the number of cycles until the development of fatigue cracks, in that these cracks develop with the first load cycles. In short-time biaxial stress of VT14 the presence of the gas-saturated layer has little effect on the strength but severely worsens the nature of fracture. The service life of VT14 under biaxial stress with the gas-saturated layer is two orders less than without the layer. One table, four figures,
1/1

USSR

UDC: 621.397:621.396.61(088.8)

PETRAKOV, A. V., GOROKHOV, V. P., KLEVALIN, V. A.

"A Method of Measuring the Stability of a Television Transmitting Tube Raster"

USSR Author's Certificate No 283333, filed 28 Jun 68, published 3 Dec 70 (from RZh-Radiotekhnika, No 6, Jun 71, Abstract No 6G177 P)

Translation: A method is proposed for measuring the stability of the raster of a television transmitting tube by transmitting a test-pattern image on the target of the tube and measuring the parameters of the video signal. To simplify the equipment when measuring the stability of the raster with respect to lines, the image of the test pattern is projected in the television transmitting tube in the form of vertical lines, and the difference in the number of video pulses in the same line at different times is measured. A modification of this method of measurement is also proposed which is distinguished by the fact that the equipment is simplified when frame stability of the raster is measured by projecting an image on the target of the TV transmitting tube in the form of triangles in contrasting colors, the centers of the altitudes being located at the boundaries of the raster, and measuring the difference in the lengths of video pulses in the same lines at different times.

1/1

USSR

UDC: 616.89:313.13"19"

PETRAKOV, B. D.

Moscow, Psikhicheskaya Zabolevayemost' v Nekotorykh Stranakh v XX Veke (Mental Disease Rates in Certain Countries in the Twentieth Century) Meditsina Press, 1972, 300 pp.

Translation of Annotation: This monograph discusses contemporary, pressing problems of social hygiene and social psychiatry, analyzes the status of the mental health of the world population in the first half and middle of the twentieth century. Particular attention is given to determination of the social "genesis" and class contrasts in the development and propagation of mental diseases in capitalist countries, as well as the regularities of the propagation of these diseases in the developing countries.

The author has noted certain tendencies in the propagation of mental diseases and regularities in the accumulation of mental patients in society between 1900 and 1970.

The work is the result of many years' labor by the author, performed during scientific trips abroad and employment in the Department of Sanitary and Epidemiological Statistics of the World Health Organization.

1/8

USSR

Petrakov, B. D., Moscow, Psikhicheskaya Zabolevayemost' v Nekotorykh Stranakh v XX Veke, Meditsina Press, 1972, 300 pp.

The book is designed for specialists in the area of social hygiene, public health organizers, psychiatrists and neuropathologists, psychologists and sociologists. The work includes 19 figures and 80 tables.

From the Editor

The book you hold in your hand comes from the pen of a specialist in the area of social hygiene and organization of public health, who worked for several years in the Department of Statistics of the World Health Organization (WHO). The author has given his attention to one of the most complex problems in medical statistics, psychiatry and social hygiene -- the propagation of nervous and mental diseases, resulting from a combination of social, economic, genetic, medical-geographic and other factors. The complexity of this problem lies not only in the specific peculiarities of nervous and mental diseases and the factors which cause them, but also in the absence of any standardized, generally accepted criteria for defining the concept of what "mental disease" or methods of studying the propagation of these diseases. These and other factors (the absence or inaccessibility of

2/8

USSR

Petrakov, B. D., Moscow, Psikhicheskaya Zabolevayemost' v Nekotorykh Stranakh v XX Veke, Meditsina Press, 1972, 300 pp.

the necessary statistical materials, etc.) have resulted in a paucity of summarizing works on the theme which Professor B. D. Petrakov has selected for his monograph in the world medical literature.

His study of the literature, his great personal experience, related to his familiarity with the statistical services and psychiatric institutions of many countries of the world and, finally, his objective training in the area of the theory of social hygiene and statistics have allowed the author to write a book which can help the reader to understand the propagation of neuro-psychological diseases abroad. However, B. D. Petrakov has not limited his work to purely statistical aspects: he has critically analyzed existing methods of study of the propagation of this group of diseases, touching upon the area of complex theoretical problems. While revealing the idealistic and metaphysical origins of bourgeois psychiatry, the author turns the attention of the reader to the rational positions of social psychiatrists, discussing them from the scientific and social hygienic standpoints. Analysis of the methodological principles of social psychiatry has allowed the author to conclude that mental hygiene, in the hands of progressive scientists in

3/8

USSR

Petrakov, B. D., Moscow, Psikhicheskaya Zabolevayemost' v Nekotorykh Stranakh v XX Veke, Meditsina Press, 1972, 300 pp.

the west is essentially an application of scientific social hygiene to psychiatry. It is this approach which justifies the concept of "social psychiatry."

The author studies the significance of various natural and social factors in the genesis and propagation of neuropsychological diseases from the standpoing of Marxist social hygiene. He is far from direct affirmation of the primary and immediate effects of the social and economic conditions in this analysis. Emphasizing the significance of many influences in the conditions of collective life of people on the development and propagation of this group of diseases, he turns his attention to the significance of genetic and biological mechanisms, which receive the influence of factors from the social medium. Thus, neuropsychological diseases are seen as a function of the bio-social complex. The author studies many other problems from these standpoints, including such debatable questions as the epidemiology of non-epidemic diseases, evaluation of the social heterogeneity of nervous and mental diseases, etc. Broadly illustrating the concept of the sharp differences between the level of mental health in various social strata of the

4/8

USSR

Petrakov, B. D., Moscow, Psikhicheskaya Zabolevayemost' v Nekotorykh Stranakh v XX Veke, Meditsina Press, 1972, 300 pp.

population of the capitalist countries with specific examples, the author thereby proves the advantages of the socialist system over the capitalist system. It is not by chance, as is emphasized in the conclusions, that the extent of neuropsychological diseases in the economically capitalist countries is significantly higher than in the USSR and other socialist states and, furthermore, does not have such sharp fluctuations, dependent on social-economic conditions, material position, race, etc.

Of course, in a monograph dedicated to such a complex theme, the reader will probably find certain shortcomings and debatable statements, particularly in the first section of the work. However, we are sure that the book will be very interesting to specialists.

Professor Yu. P. Lisitsyn

Table of Contents

5/8

USSR

Petrakov, B. D., Moscow, Psikhicheskaya Zabolevayemost' v Nekotorykh Stranakh v XX Veke, Meditsina Press, 1972, 300 pp.

USSR

Petrakov, B. D., Moscow, Psikhicheskaya Zabolevayemost' v Nekotorykh Stranakh v XX Veke, Meditsina Press, 1972, 300 pp.

USSR

Petrakov, B. D., Moscow, Psikhicheskaya Zabolevayemost' v Nekotorykh Stranakh v XX Veke, Meditsina Press, 1972, 300 pp.

8/8

Acc. Nr. AP0055643 Abstracting Service: CHEMICAL ABST. 6-70 Ref. Code UR0960

112174c **Differential thermal analysis study of phenol-formaldehyde novolaks hardening with hexamethylenetetramine.** Kurachenkov, V. I.; Petrakov, V. M.; Igonin, L. A. (Nauch.-Issled. Inst. Plast. Mass., Moscow, USSR). *Vysokomol. Soedin., Ser. B* 1970, 12(2), 127-9 (Russ). The hardening of com. novolak resin K-18 contg. 10% hexamethylenetetramine proceeds differently at atm. and high pressure. DTA shows that the 1st stage process, which at atm. pressure occurs at 120-60°, does not occur under pressure ≧3000–4000 kg/cm². The DTA curves have a 2nd exothermic peak at 230-60° corresponding to the 2nd stage hardening at which resol-type resins are formed. CPJR

VI

REEL/FRAME
19840945

7 CB

USSR

UDC 621.317.361

IRTEGOV, YU. N., ISKANDAROV, F., PETRAKOVA, V. N., PURCHENOV, V. P., SHAMIN, G. F., and ZYKOV, A. A.

"A Device for Determining and Recording the Spectral Characteristics of Complex Signals"

USSR Author's Certificate No 363930 kl G 01 r 23/18, filed 20 Jan 71, published 7 Mar 73 (from RZh Avtomatika Telemekhanika i Vychislitel'naya Tekhnika, No 11, Nov 73, abstract No 11 A437P)

Translation: A device is proposed for determining and recording the spectral characteristics of complex signals, containing an input apparatus, a group of band-pass filters, a filter interrogation unit, a recording unit with electrodes, and a paper tape transport unit.

To improve the accuracy, the output of the filter interrogation unit is connected through an analog-code converter and recirculator in series, one of the inputs of which is connected to the control unit; the amplitude gradation decoder is connected to the inputs of an arbitrary symbol synthesizer.

In this approach, the control inputs of the synthesizer are connected to the outputs of a vertical symbol scanning unit. The second input of this unit is

1/2

USSR

IRTEGOV, YU. N., et al., USSR Author's Certificate No 363930 kl G 01 r 23/18

supplied with a signal from a cycle pulse generator. The control inputs of the synthesizer are also connected to the outputs of a horizontal symbol scanning unit, the input of which is connected through an electrode counter (whose input is supplied with a signal from the cycle pulse generator) to the inputs of the control unit. The control inputs of the synthesizer are also connected in parallel through the inputs of an "AND" gate to the decoder of the addresses of electrodes connected to the recording unit. One illustration.

2/2

USSR

YAKOVLEV, G. M., CHERNYKH, N. L., and PETRAKOVSKAYA, Ye. A., Tomsk Medical Institute

"On the Question of Registering Changes in Blood Quantity and the Possibility of Determining Overall Blood Volume in an Organism by Means of Measuring Electrical Resistance of the Human Body"

Moscow, Doklady Akademii Nauk SSSR, Vol 201, No 2, 1971, pp 510-512

Abstract: Experiments were conducted in an effort to correct and refine claims made by other investigators that blood loss from a region and the entire volume of blood in circulation can be calculated from a recorded change in the electrical resistance of tissue. The present authors, discovering an error in previous mathematical formulas, showed that calculation of the entire volume of blood in circulation was no longer possible on the basis of existing theories. Then, using corrected equations and comparing those values with results from empirical studies, the authors found that change in electrical resistance was an accurate gauge of blood loss from regions of limited extent. However, because the measured value of electrical resistance in tissue was not uniform throughout the body, the present method for determining blood loss in the whole organism was unsatisfactory.
1/1

USSR

UDC: 621.372.852.5

PETRAKOVSKIY, G. A., SMOKOTIN, E. M., Institute of Physics imeni A. V. Kirenskiy, Siberian Department, Academy of Sciences of the USSR

"A Converter Which Changes Acoustic Oscillations to Electric Waveforms"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 10, Apr 72, Author's Certificate No 332529, division H, filed 1 Jul 70, published 14 Mar 72, pp 213-214

Translation: This Author's Certificate introduces a converter which changes acoustic oscillations to electric waveforms. The device contains an acoustic line, a transducer element, and a circuit for recording the change in the electromagnetic parameters of the transducer element. The electromagnetic parameters of the transducer element depend on the acoustic oscillations propagating in it. As a distinguishing feature of the patent, conversion losses are reduced by making the transducer element in the form of a single-crystal ferrite specimen fastened at the end of the acoustic line, and by connecting a microwave oscillator, detecting head, short circuiting device and microwave resonator to the arms of a double waveguide T-bridge in the registration circuit. The part of the acoustic line with the ferrite specimen is introduced into the microwave resonator.

1/1

USSR

PETRAKOVSKIY, G. A., PETROV, A. S., TABARIN, V. A.

"Study of an Yttrium Garnet as an Element of a Reactive Modulation Amplifier"

Izvestiya Akademii Nauk SSSR, Seriya Fizicheskaya, Vol 34, No 6, 1970, pp 1,194-1,196

Abstract: A linear analysis is made of a ferrite-based reactive modulation amplifier by a simultaneous solution of the Maxwell and the Landau-Lifshits equations using the Krylov-Bogolyubov method. An experimental investigation was also made of an experimental model of a reactive modulation video amplifier based on a yttrium garnet. Stable amplification of not less than 30 db was obtained in the band from 1.5 to 4.5 megahertz. Investigation of the noise spectrum of the ferrite confirmed the low-noise factor of the ferrite amplifier.

1/1

USSR

UDC 621.382.002 (088.8)

KOCHKAREV, G.V., KRACHKOVSKIY, O.I., LEYBOVICH, A.SH., CHARNYY, YU.S., PETRAKOVSKIY, YA.SH., SIDORENKO, L.D., LEVAKOV, V.P., GLADCHENKO, V.P., RATNER, YU.A.

"Classifier Of Semiconductor Devices"

USSR Author's Certificate No 296180, filed 14 July 1969, published 18 May 1971 (from RZh--Elektronika i yeye primeneniye, No 3, March 1972, Abstract No 3B357)

Translation: The classifier of semiconductor devices (principally transistors) contains a unit [uzel] for connection of a device to the measuring equipment, the measuring equipment, logical equipment, mechanism for marking the polarity, and a unit for allocation of the measured devices into a container; it has a rotating tube connected with an electric motor. With the object of increasing the speed of operation and the efficiency of the classifier, the unit for connection, made in the form of a revolving reversible disk, supporting two blocks [kolodka] for the devices, diametrically located and connected by a flexible braid [zhgut] with the measuring device, and two withdrawing devices, mounted on the axis of the blocks, is partially arranged inside a guiding hopper, connected with the rotating tube of the unit for allocation, and under the disk of the unit for connection, in a groove of the lateral surface of the hopper, the mechanism for marking the polarity is located.

1/1

USSR

UDC 53:371.3

PETRASH, F. T.

"Determining the Type of Conductivity of Semiconductors"

Uch. zap. Checheno-Ingushsk. gos. ped. in-t (Scientific Notes of Checheno-Ingush State Pedagogical Institute), 1970, No 29, pp 33-34 (from RZh-Fizika, No 1, Jan 71, Abstract No 1A73)

Translation: The thermal probe method is proposed for determining the type of conductivity of semiconductors in middle school. A diagram of the electric circuit for determining the type of conductivity by this method is presented and advice is given on carrying out practical work. S. U. Goncharenko.

1/1

USSR

UDC 621.373:535(206.3)

ISAYEV, A. A., KAZARYAN, M. A., PETRASH, G. G.

"A Copper-Vapor Pulsed Laser With Repetition Rate of 10 kHz"

Leningrad, Optika i Spektroskopiya, Vol 35, No 3, Sep 73, pp 528-531

Abstract: Emission and superemittance were obtained in copper vapor by using alundum tubes 70 cm long and 0.8 cm in diameter. The copper was applied in pieces over the length of the discharge tube. Pulsed discharge was excited by a capacitor through a thyratron. The resonator was made up of a dielectric mirror with 2-meter radius of curvature and a flat glass substrate. The laser produced emission on lines of 5106 and 5782 Å. The average emission power at a pulse repetition rate of 10 kHz was 2.4 w, which corresponds to a peak emission power of 48 kw for voltage across the capacitor of 20 kv (pulse duration was 5 ns). An appreciable part of the power was concentrated in the green line. The specific peak power in this case is 1.4 kw/cc, which is a record for all gas-discharge lasers with atomic and ionic transitions.
1/1

1/2 023 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--NEW LINES OF PULSED GENERATION AND SUPERLUMINANCE OWING TO NEON TRANSITIONS IN THE VISIBLE SPECTRAL REGION -U-

AUTHOR-(02)-KASLIN, V.M., PETRASH, G.G.

COUNTRY OF INFO--USSR

SOURCE--ZH. PRIKL. SPEKTROSK. 1970, 12 (3), 540-2

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--LUMINESCENCE, NEON, PULSE GENERATOR, SPECTRUM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1997/0328 STEP NO--UR/0368/70/012/003/0540/0542

CIRC ACCESSION NO--AP0119315

UNCLASSIFIED

2/2 023 UNCLASSIFIED PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0119315

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. TWO NEW LINES OF PULSED GENERATION WITH WAVELENGTHS OF 6506.52 AND 6304.77 ANGSTROM ARE OBSD. IN MIXTS. OF NE WITH SF SUB6 (VOL. RATIO SF SUB6-NE EQUALS 2-9) AT A TOTAL PRESSURE OF 0.012 TORR. THE LINES ARE ASCRIBED TO 2 RHO SUB8 YIELDS 1S SUB4 AND 2 RHO SUB6 YIELDS 1S SUB4 NE TRANSITIONS IN THE VISIBLE SPECTRAL REGION. THE PULSED GENERATION IS CHARACTERIZED BY AN ANOMALOUS TOROIDAL SECTION OF LASER BEAM AND A DURATION OF EQUIVALENT 40 NSEC. AFTER REMOVING SF SUB6 ONLY WELL KNOWN LINE AT 6143.06 ANGSTROM (2 RHO SUB6 YIELDS 1S SUB5 NE TRANSITION) IS OBSD. THE MECHANISM OF THE SF SUB6 EFFECT IS EXPLAINED BY SELECTIVE BREAKDOWN OF 1S SUB4 LEVEL. SUPERLUMINANCE ON THE LINE WITH A WAVELENGTH OF 6506.52 ANGSTROM IS ALSO REPORTED.

UNCLASSIFIED

USSR

UDC 621.378.33 539.194

KASLIN, V.M., KUN'KOVA, Z.E., PETRASH, G.G.

"Generation In Infrared Region At Molecular Hydrogen Lines With Active Gas Cooling"

Kvantovaya elektronika (Quantum Electronics), Moscow, No 5(11),1972, pp 101-103

Abstract: The experimental results are reported of pulsed generation at the H_2 molecular electron transition $2s\,\sigma E^1\Sigma_g^+ - 2p\,\sigma B^1\Sigma_u^+$. Curves are shown of the average total power of generation W as a function of the gas pressure p with various voltages at the capacitor and gas temperatures 320° and 100° K. A comparison of the experimental results with the results on generation in N_2 and CO discussed in earlier papers by the authors shows that the basic characteristics of generation in the infrared region at H_2 electron transitions fit into the general laws inherent in pulse gas lasers at molecular electron transitions. The region where generation exists is described by a parameter $\gamma = (V - V_0)/N$ where V is a voltage across a tube, N is the gas density, and V_0 is a constant value. When the gas was cooled down a record peak power of 1.5 kW for such a laser could be achieved. 3 fig. 9 ref. Received by editors, 27 March 1972.

1/1

USSR

UDC 621.378.325

ISAYEV, A.A., KAZARYAN, M.A., PETRASH, G.G.

"Lead Vapor Pulsed Laser With High Peak And Average Powers"

Kvantovaya elektronika (Quantum Electronics), Moscow, No 5(11),1972, p 100

Abstract: Previous experiments conducted by the authors show that lasers based on lead, copper, gold, and manganese vapors can operate at a large repetition frequency of pulses which reach 2.5 kHz, and assure significant specific peak powers (order of a hundred watts for 1 cm^2). These results were obtained with tubes of small active volume, because of which full peak and average powers of generation were limited. In connection with this it was important to investigate whether or not a considerable increase of the active volume is possible without a decrease of the specific power of generation. In the present work a lead vapor laser was chosen as the research object because work with it is simpler as the working temperature (900--1000° C) is not too high. Discharge tubes of alundum were used in the experiments. With tubes which have an interior diameter of 1.5 cm, a length of the active part of 60 cm, a voltage at the primary winding of a pulse transformer of 17 kv, a pressure of the neon buffer gas of 5 tor, and a recurrence frequency of 2.5 kHz, the maximum average power of generation at a line with λ = 0.7229 micron amounted to 0.3 watt. A Peak power of 34 kw and a

1/2

USSR

ISAYEV, A.A., et al, Kvantovaya elektronika, Moscow, No 5(11),1972, p 100

specific peak power of 315 w/cm^2 were obtained. The 34 kw exceeds by more than an order of magnitude the value (2 kw) obtained earlier with the same laser. 1 fig. 4 ref. Received by editors, 10 Apr 1972.

2/2

USSR

UDC 621.373.826

KASLIN, V. M., KNYAZEV, I. N., PETRASH, G. G.

"Pulse Generation in the First Positive Nitrogen Band System with Cooling of the Working Gas"

V sb. Kvant. elektronika (Quantum Electronics--collection of works), Moscow, No 5, 1971, pp 44-52 (from RZh-Radiotekhnika, No 1, 1972, Abstract 1D343)

Translation: A study was made of the laser characteristics in the first positive nitrogen system with cooling of the working gas. It was demonstrated that in this laser there is a significant increase in amplification on cooling the gas. The studies permitted significant improvement of the power, the generation pulse energy and the efficiency of the system. Superluminous emittance conditions were obtained in this system for the first time. It was found that the optimal conditions of existence of generation are uniquely determined by the parameter $\gamma \sim E/N$ (where E is the electric field intensity in the discharge tube, N is the working gas density). A record generation power for the given laser of 55 kilowatts was achieved. The significant role played by the build-up rate of the photon avalanche in pulse lasers was demonstrated experimentally. A new phenomenon in molecular spectroscopy was discovered: inversion of alternation of the intensities in the molecular spectra of stimulated radiation. There are 4 illustrations and a 12-entry bibliography.

1/1

USSR

UDC: 535.89

PETRASH, G. G., Physics Institute imeni P. N. Lebedev, Academy of Sciences of the USSR

"Gas-Discharge Pulse Lasers"

Moscow, Uspekhi Fizicheskikh Nauk, Vol 105, No 4, Dec 71, pp 645-676

Abstract: This is a survey article which systematizes the literature on the current state-of-the-art and prospects for future development of gas-discharge pulse lasers. The topics covered include the limiting characteristics of lasers in this class, gas discharge lasers based on atomic transitions, transitions in ions, electron transition in molecules, a comparison of lasers based on transitions in atoms and in molecules, the prospects for pushing gas-discharge pulse laser emission into the short-wave region of the spectrum, increasing particle concentration in the active medium, and methods of converting to a continuous collision laser. Six figures, six tables, bibliography of 130 titles.

1/1

USSR

UDC: 621.373:530.145.6

ANOKHIN, A. V., MARKOVA, S. V., PETRASH, G. G.

"Pulse Emission on Vibrational Transitions of CO During Cooling of the Gas"

Kratk. soobshch. po fiz. (Brief Reports on Physics), 1970, No 8, pp 15-21 (from RZh-Radiotekhnika, No 12, Dec 70, Abstract No 12D215)

Translation: To study emission on vibrational transitions in CO in the pulse mode, the gas was cooled by using cold nitrogen. Pulse emission was studied in a CO discharge and CO-He, CO-N_2 and CO-N_2-He mixtures. Emission on a Co-He mixture was studied in greatest detail. Emission in the CO discharge had considerably less power and a completely specific nature as compared with emission in the mixtures. It is shown that the presence of He considerably improves emission on CO transitions. The most characteristic feature of emission on CO-He is the abrupt increase in emission power in the afterglow. It is assumed that the formation of an inversion on CO transitions can be explained by a relaxation mechanism with respect to the vibrational levels of an anharmonic oscillator. A. K.

1/1

UDC 539.3:534.1

USSR

PETRASHEN', G. I., and KHINEN, E. F.

"Concerning Conditions of the Application of Engineering Equations of Oscillations of Nonideally Elastic Plates"

Leningrad, Vopr. Dinamich. Teorii Raspostr. Seymich. Voln -- Sbornik (Questions of the Dynamic Theory of Seismic Wave Propagation -- Collection of Works), Nauka, No 11, 1971, pp 48-56 (from Referativnyy Zhurnal, Mekhanika, No 2, Feb 72, Abstract No 2V232 by Yu. K. Konenkov)

Translation: An investigation is made of refined equations of thin elastic plates. Instead of the squares of the transverse velocity and the longitudinal velocity of propagation, integral operators with respect to time with a difference kernel which characterize the losses, are introduced into the exact equations of motion of the layer. Approximate differential equations are presented, which correspond to expansion of the operator with respect to thickness, and the limitations upon the influence parameters are indicated, in such a manner that the difference between the exact solution and the approximate solution be smaller than a preassigned value.

1/1

1/2 016 UNCLASSIFIED PROCESSING DATE--20NOV70

TITLE--DISSOCIATION CONSTANTS AND STATE OF QUINOLINAZO R IN SOLUTIONS -U-

AUTHOR-(03)-BASARGIN, N.N., KADOMTSEVA, A.V., PETRASHEN, V.I.

COUNTRY OF INFO--USSR

SOURCE--ZH. ANAL. KHIM. 1970, 25(1), 34-9

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--QUINOLINE, AZO COMPOUND, IONIZATION, PROTON, HETEROCYCLIC NITROGEN COMPOUND, DISSOCIATION CONSTANT, SULFONIC ACID

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3002/1178 STEP NO--UR/0075/70/025/001/0034/0039

CIRC ACCESSION NO--AP0128600

UNCLASSIFIED

2/2 016 UNCLASSIFIED

CIRC ACCESSION NO--AP0128600 PROCESSING DATE--20NOV70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE IONIZATION CONSTS. OF QUINOLINAZO R (I) AS AN ANAL. REAGENT WERE DETD. GRAPHICALLY AND BY CALCN. FROM SPECTROPHOTOMETRIC DATA. THE ACID BASE IONIZAITON OF I IS REPRESENTED BY: RH SUB5 PRIME2 POSITIVE IN EQUILIBRIUM RH SUB3 PRIME0 PLUS 2H (ONE PROTON OF THE AZO GROUP AND THE SULFO GROUP SPLITS OFF); RH SUB3 PRIME0 YIELDS RH PRIME2 NEGATIVE PLUS 2H PRIME POSITIVE (ONE PROTON SPLITS OFF FROM THE HETEROCYCLIC N AND THE SULFO GROUP); RH PRIME2 NEGATIVE IN EQUILIBRIUM R PRIME3 NEGATIVE PLUS H PRIME POSITIVE (ONE PROTON OF THE OH GROUP SPLITS OFF). THE PROTONIZATION CONSTS. OF HETEROCYCLIC N AND THE DISSCCN. CONSTS. OF THE HYDROXYL GROUP WERE PK SUBNH PRIME POSITIVE EQUALS 1.48 AND PK SUBOH EQUALS 11.49 IN AQ. SOLNS. WITH IONIC STRENGTH OF 0.1 (KCL) AT 20DEGREES. THE PK SUB1 AND PK SUB2 VALUES DETD. GRAPHICALLY ARE 1.50 AND 11.43, RESP. FACILITY: NOVOCHERKASSK POLYTECH. INST., NOVOCHERKASSK, USSR.

UNCLASSIFIED

1/2 013 UNCLASSIFIED PROCESSING DATE--09OCT70

TITLE--SPECTROPHOTOMETRIC STUDY OF THE REACTION OF COBALT WITH QUINOLINAZO R -U-

AUTHOR-(03)-BASARGIN, N.N., KADOMTSEVA, A.V., PETRASHEN, V.I.

COUNTRY OF INFO--USSR

SOURCE--ZH. ANAL. KHIM. 1970, 25(2), 285-93

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--SPECTROPHOTOMETRIC ANALYSIS, COBALT, COMPLEX COMPOUND, MAGNETIC SUSCEPTIBILITY, PROTON, HETEROCYCLIC NITROGEN COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1993/0918 STEP NO--UR/0075/70/025/002/0285/0293

CIRC ACCESSION NO--AP0113753

UNCLASSIFIED

2/2 013 UNCLASSIFIED PROCESSING DATE--090CT70

CIRC ACCESSION NO--AP0113753

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CO FORMS A VIOLET COMPLEX WITH QUINOLINAZO R(1-(8,QUINOLYLAZO),2,- HYDROXY,3, 6,NAPHTHALENE DISULFONIC ACID) IN THE PH RANGE 0.3-14 WITH MAX. ABSORBANCE AT 570 NM AND MOLAR ABSORPTIVITY 3.02 TIMES 10 PRIME4. MAX. ABSORBANCE OF THE REAGENT IS AT 490 NM. AT 20 PLUS OR MINUS 1DEGREES MU EQUALS 0.3 TO 0.1, THE EQUIL. CONST. OF THE REACTION IS 2.2 TIMES 10 PRIME11 AND THE INSTABILITY CONST. OF THE COMPLEX IS 8.3 TIMES 10 PRIME NEGATIVE51. THE COMPLEX DOES NOT DESINTEGRATE AFTER ADJUSTING FROM PH 1.5 TO 6N H SUB2 SO SUB4 (HCL). MAGNETIC SUSCEPTIBILITY DATA SHOWED THAT CO EXISTS IN THE COMPLEX IN ITS TRIVALENT STATE. SIX PROTONS ARE LIBERATED IN REACTIONS IN AN ACID MEDIUM. THREE OF THEM SPLIT OFF THE OH GROUPS AND 3 OTHERS SPLIT OFF THE PROTONIZED ATOMS FOR THE HERE ROCYCLIC N OF THE REAGENT MOLS. FACILITY: NOVOCHERKASSK POLITECH. INST., NOVOCHERKASSK, USSR.

UNCLASSIFIED

Acc. Nr: AP0034219 Abstracting Service: CHEMICAL ABST. 4-70 Ref. Code: UR 0078

71216x Extraction of molybdenum(VI) and rhenium(VII) from inorganic acid solutions by tertiary amines. Anolkhina, I. G.; Agrinskaya, N. A.; Petrashen, V. I. (Kafedra Anal. Khim., Novocherkassk. Politekh. Inst., Novocherkassk, USSR). *Zh. Neorg. Khim.* 1970, 15(1), 155–60 (Russ). Mo(VI) and Re(VI) were extd. by PhMe solns. of dioctylmethylamine (I) or trioctylamine (II) from HCl, HNO_3, or H_2SO_4 solns. The degree of extn. decreased with acids in the order: H_2SO_4 > HCl > HNO_3. For I the max. extractability was obtained: 88–90% at pH 2.1–2.6 in HNO_3 and 97–8% at pH 2.0–3.0 in H_2SO_4 solns. II is a better extg. agent than I.

HMJR

1/1

7

REEL/FRAME
19710872

USSR

UDC 546.185:541.651.2

KUKHAR', V. P., PETRASHENKO, A. A., ZHMUROVA, I. N., TUKHAR', A. A., SOLODUSHENKOV, S. N., Institute of Organic Chemistry, Kiev, Academy of Sciences Ukrainian SSR

"Basicity of Phosphazo Compounds. I"

Leningrad, Zhurnal Obshchey Khimii, Vol 40, No 8, Aug 70, pp 1696-1699

Abstract: m-Triphenylphosphazobenzoic acid and its methyl ester, melting at 199-201° and 126-127°, respectively, were synthesized by adding triphenylphosphine to a hot solution of the parent acid or ester in benzene and collecting the product precipitated from the cooled mixture. The p-triphenylphosphazobenzoic acid was obtained analogously with reversed addition of the reagents; the product melted at 241-243°C. To obtain triphenylphosphazo-p-trifluoromethylsulfonylbenzene, m.p. 157-159°, triphenylphosphine was added to the benzene solution of p-trifluoromethylsulfonylazidobenzene. A solution of p-trifluoromethylsulfonylaniline in dilute hydrochloric acid was diazotized, and a solution of sodium azide

1/2

USSR

KUKHAR', V. P., et al, Zhurnal Obshchey Khimii, Vol 40, No 8, Aug 70, pp 1696-1699

was added gradually, yielding p-trifluoromethylsulfonylazidobenzene, m.p. 53-55°. Other compounds were obtained by known methods. Their pK values for basic and acidic ionization were determined. It was found that the substituents on the phenyl ring show principally an inductive effect on the reactive center of the triphenylphosphazoarenes. The m-triphenylphosphazo group is a greater electron donor than the m-dimethylamino group, and the p-triphenylphosphazo group is a slightly lesser electron donor than the p-dimethylamino group. In 95% alcohol the m- and p-triphenylphosphazobenzoic acids exist to a considerable degree as internal salts.

2/2

USSR

UDC 547.558.1+546.185

ZHMUROVA, I. N., YURCHENKO, R. I., KUKHAR', V. P., PETRASHENKO, A. A., and KIRSANOV, A. V., Institute of Organic Chemistry, Acad. Sc., Ukrainian SSR

"Protonation of Triphenylphosphazoazobenzenes"

Leningrad, Zhurnal Organicheskoy Khimii, Vol 7, No 5, May 71, pp 1027-1031

Abstract: 4-Triphenylphosphazoazobenzenes (I) are protonated in alcoholic solution of 1N HCl principally at the triphenylphosphazo group. When the strength of hydrochloric acid is increased to the level of 3-6 N, the tautomeric equilibrium is shifted slightly towards the azo group salts. The differences in absorption maxima of (I) spectra taken in neutral and acid media (4N HCl) correlate with the σ^- constants of the 4'-position substituents. In comparison to 4-amino- and 4-dimethylaminoazobenzenes, the 4-triphenylphosphazoazobenzenes are more basic by about 5-6 pKa units. Although accurate comparisons were not possible, the basicity constants of (I) type c compounds correlate with the σ^o and σ^- constants of the substituents on the 4-position.

1/1

USSR

UDC 547.491.8

KUKHAR', V. P., BUKOVSKII, M. I., KASHEVA, T. N., PALEYCHUK, V. S., PETRASHENKO, A. A., SOLODUSHENKOV, S. N., Institute of Organic Chemistry, Academy of Sciences Ukrainian SSR

"Phosphazo-1,3,5-triazines. IV"

Leningrad, Zhurnal Obshchei Khimii, Vol 40, No 6, Jun 70, 1226-1229

Abstract: 2-Azido-4,6-dimethoxy(phenoxy)-1,3,5-triazines easily react with tertiary phosphines and trialkyl phosphites to form 2-phosphazo-4,6-dimethoxy (phenoxy)-1,3,5-triazines. The reaction is exothermic and is completed within 10-15 min. Triphenyl phosphite reacts less rapidly. Tertiary phosphines react easily with azides of diaminotriazines to form 2-phosphazo-4,6-diamino--1,3,5-triazines. The phosphazo compounds are colorless crystals which readily dissolve in alcohol, acetone, methanol, but which are insoluble in water and hexane. They are hydrolyzed in boiling water or in 1N hydrochloric acid. The basicities of the compounds were determined in nitromethane and recalculated to the corresponding values in water. All these compounds were found to be weak bases. Presence of amino or alkylamino groups in the molecule raises the basicity by 3-4 units.

1/1

USSR

UDC: 681.3.06:51

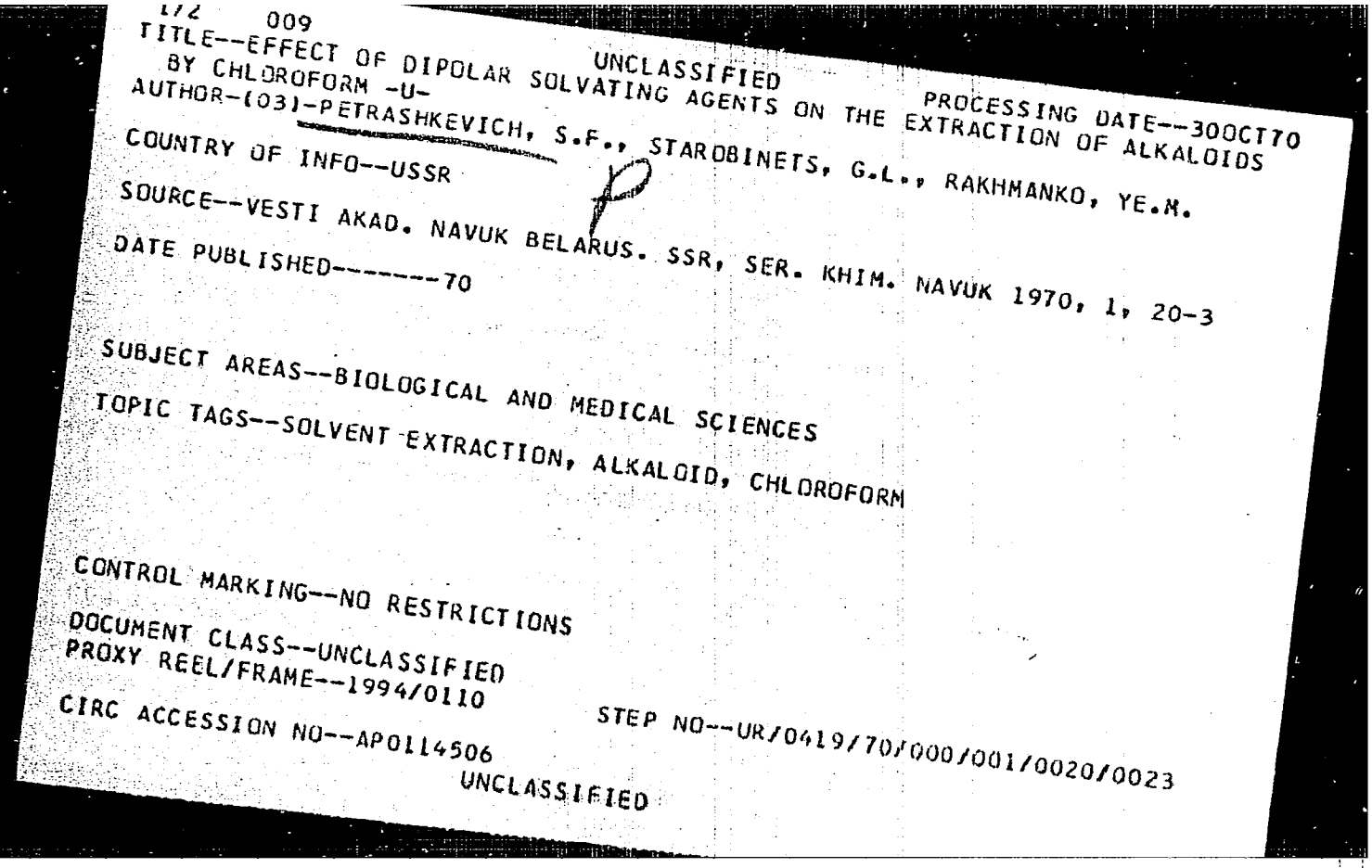
PETRASHEVSKIY, O. L. and YARMOLENKO, A. M.

"Solving Systems of Nonlinear Algebraic Equations by the Method of Variation of Parameters"

Kiev, V sb. Mashiny dlya inzh. raschetov (Machines for Engineering Computations--collection of works) 1973, pp 13-19 (from RZh--Avtomatika, telemekhanika i vychislitel'naya tekhnika, No 12, 1973, Abstract No 12B98)

Translation: A program is given for solving a system of n nonlinear algebraic equations $f_i(y_1,\ldots,y_n) = 0$ with the initial conditions $x(?)\,|i = \overline{1,n}|$ by the method of variation of parameters. Programs are presented for solving two control examples. N. V.

1/1



1/2 009 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--EFFECT OF DIPOLAR SOLVATING AGENTS ON THE EXTRACTION OF ALKALOIDS BY CHLOROFORM -U-
AUTHOR-(03)-PETRASHKEVICH, S.F., STAROBINETS, G.L., RAKHMANKO, YE.M.
COUNTRY OF INFO--USSR
SOURCE--VESTI AKAD. NAVUK BELARUS. SSR, SER. KHIM. NAVUK 1970, 1, 20-3
DATE PUBLISHED--------70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--SOLVENT EXTRACTION, ALKALOID, CHLOROFORM
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1994/0110
CIRC ACCESSION NO--AP0114506
STEP NO--UR/0419/70/000/001/0020/0023
UNCLASSIFIED

2/2 009 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0114506

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECT OF DIPOLAR SOLVATING AGENTS (PHENOL, M AND P,CRESOL, P,CHLOROCRESOL, O,BROMOCRESOL, O AND P,DIBROMOPHENOL, AND BUTANOL) ON THE EXTN. OF ALKALOIDS (HYDROCHLORIDES OF DIONINE, QUININE, DIMEDROL, SALSOLIDINE, AND NOVOCAINE AND PLATYPHYLLINE BITARTRATE) BY CHCL SUB3 FROM AQ. SOLNS. CONTG. UNIVERSAL BUFFER (PH 3) WAS STUDIED AT 20 PLUS OR MINUS 2DEGREES, VOL. PHASE RATIO 1 TO 1, THE ALKALOID CONCN. 5 TIMES 10 NEGATIVE PRIME4 EQUIV., AND THE SOLVATING AGENT CONCN. 0.1-2.5 MOLE,L. AT A CONST. ANION CONCN. IN THE AQ. PHASE, THE LOG OF THE ALKALOID DISTRIBUTION COEFF. IS A LINEAR FUNCTION OF THE LOG OF THE SOLVATING AGENT CONCN. THE VALUE OF THE EXTN. CONST. IS DETD. BY THE ABILITY OF THE SOLVATING AGENT MOL. TO ACT AS A PROTON DONOR AND BY THE RATIO OF THE HYDROPHOBIC AND POLAR GROUPS IN THE ORG. CATION. THE EFFECTIVE SOLVATION NO. FOR THE SAME IONIC PAIR INCREASES WITH DECREASING PK OF THE SOLVATING AGENT. FACILITY: BELORUSS. GOS. UNIV. IM. LENINA, MINSK, USSR.

UNCLASSIFIED

1/2 033 UNCLASSIFIED PROCESSING DATE--04DEC70

TITLE--USE OF GAS LASERS TO MEASURE THE FREQUENCY CHARACTERISTICS OF PHOTODETECTORS -U-

AUTHOR-(02)-YEPIFANOV, V.P., PETRASHKO, G.A.

COUNTRY OF INFO--USSR

SOURCE--RADIOTEKHNIKA I ELEKTRONIKA, VOL. 15, JUNE 1970, P. 1317, 1318

DATE PUBLISHED----JUN70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--HELIUM NEON LASER, SINGLE MODE LASER, PHOTOMULTIPLIER TUBE, AUTOMATIC FREQUENCY CONTROL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3007/1020 STEP NO--UR/0109/70/015/000/1317/1318

CIRC ACCESSION NO--AP0136447

UNCLASSIFIED

2/2 033 UNCLASSIFIED PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0136447

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. MEASUREMENT OF THE FREQUENCY RESPONSE OF PHOTOMULTIPLIERS USING BEAT FREQUENCY LIGHT SIGNALS FROM TWO MIXED SINGLE MODE LASERS. TWO HE-NE LASERS WITH SLIGHTLY DIFFERENT NEON ISOTOPE COMPOSITIONS WERE USED, RESULTING IN A 300-MHZ DIFFERENCE IN NATURAL EMISSION FREQUENCIES. AUTOMATIC FREQUENCY CONTROL WAS USED TO ENSURE PLUS OR MINUS 50-KHZ ACCURACY OVER A TUNABLE BEAT FREQUENCY RANGE FROM 10 TO 1200 MHZ. THE FREQUENCY RESPONSE OF TWO PHOTOMULTIPLIERS WAS MEASURED WITH THE SYSTEM, AND THE RESULTS ARE GIVEN IN A GRAPH.

UNCLASSIFIED

1/2 019 UNCLASSIFIED PROCESSING DATE--11SEP70

TITLE--REACTION OF FORMALDEHYDE AND HYDROGEN PEROXIDE IN ACID SOLUTIONS -U-

AUTHOR--BARANCHIK, G.N., ZHIGUNOV, I.S., KOROLEVA, G.N., PETRAYEV, E.P., KOROLEVA, G.N.

COUNTRY OF INFO--USSR

SOURCE--VESTSI AKAD. NAVUK BELARUS. SSR, SER. KHIM. NAVUK 1970, (1), 119-21

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CHEMICAL REACTION MECHANISM, CHEMICAL DECOMPOSITION, CHEMICAL REACTION KINETICS, FORMALDEHYDE, HYDROGEN PEROXIDE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1987/1075 STEP NO--UR/0419/70/000/001/0119/0121

CIRC ACCESSION NO--AP0104473

UNCLASSIFIED

2/2 919 UNCLASSIFIED

CIRC ACCESSION NO--AP0104473 PROCESSING DATE--11SEP70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DECOMPN. OF CH SUB2 O IN AQ. H SUB2 O SUB2 WAS 1ST ORDER IN RESPECT TO BOTH REACTANTS IN THE TEMP. INTERVAL 20-60DEGREES, WHILE THE DECOMPN. OF H SUB2 O SUB2 IS ZERO ORDER IN RESPECT TO CH SUB2 O, AND 2ND ORDER IN RESPECT TO H SUB2 O SUB2 IN THE 20-40DEGREES INTERVAL, BUT 1ST ORDER AT 60DEGREES. THUS, THE REACTION INVOLVES THE OXION. OF CH SUB2 O BY 1 MOLE H SUB2 O SUB2 FORM H SUB2 O AND HCO SUB2 H, AND DECOMPN. OF 2H SUB2 O SUB2 TO YIELD 2H SUB2 O AND O AS SIMULTANEOUS REACTIONS. THE ZERO ORDER IN RESPECT TO CH SUB2 O INDICATES AN INTERMEDIATE COMPLEX FORMATION IN WHICH CH SUB2 O-O PROBABLY UNDERGO A REARRANGEMENT THAT RESULTS PROBABLY IN PERFORMIC ACID, WHICH THEN DECOMPS. TO EITHER HCO SUB2 H OR CO SUB2 PLUS H SUB2 O. KINETIC DATA ON THE REACTION WERE TABULATED.

UNCLASSIFIED

1/2 023 UNCLASSIFIED PROCESSING DATE--27NOV70

TITLE--RESONANCE INTEGRALS OF THE FISSION OF URANIUM, PLUTONIUM, AND AMERICIUM ISOTOPES -U-

AUTHOR-(05)-PETRAZHAK, K.A., BAK, M.A., PETROV, YU.G., ROMANOV, YU.F., SHLYAMIN, E.A.

COUNTRY OF INFO--USSR

SOURCE--AT. ENERG. 1970, 28(CT), 359-60

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS, NUCLEAR SCIENCE AND TECHNOLOGY

TOPIC TAGS--NUCLEAR FISSION, NUCLEAR RESONANCE, INTEGRAL FUNCTION, URANIUM, PLUTONIUM, AMERICIUM, FISSION CROSS SECTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3007/1066 STEP NO--UR/0089/70/028/000/0359/0360

CIRC ACCESSION NO--AP0136486

UNCLASSIFIED

2/2 023 UNCLASSIFIED

CIRC ACCESSION NO--AP0136486 PROCESSING DATE--27NOV70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE FISSION RESONANCE INTEGRALS WERE DETD. TO BE PRIME233 U 850 PLUS OR MINUS 90, PRIME239 PU 330 PLUS OR MINUS 30, PRIME241 PU 550 PLUS OR MINUS 40, AND PRIME241 AM 21 PLUS OR MINUS 2 BARNS. THE FISSION RESONANCE INTEGRAL FOR PRIME235 U WAS TAKEN AS 274 PLUS OR MINUS 11 IN THE CALCNS.

UNCLASSIFIED

USSR

UDC: 62-507

YAKUBAYTIS, E. A. and PETRENKO, A. F.

"Reducing the Number of Memory Elements in the Cyclic Model of a Discrete Device"

Riga, Avtomatika i vychislitel'naya tekhnika, No 1, 1972, pp 1-5

Abstract: A cyclic model of a discrete device is here defined as a finite automaton in which all signals and elements have certain characteristics and whose structure is of a particular type. The type of structure demanded is reproduced in the article in diagram form. The characteristics of the signals and elements are: a change in any signal may occur during a non-zero time interval; the operation time of the elements is limited but greater than zero; the moments of reaction to changes in any signal of the various elements may not coincide in time. Under the assumption that the operating conditions are specified by a normal table of transitions and that the code for the inner states is given, the authors solve the problem of reducing the number of memory elements in the model without errors arising from disagreements between output and intermediate signals. An example of the application of the procedure recommended by the authors is given.

1/1

USSR

UDC 577.4

PETRENKO, A. F.

"Minimizing the Code Length of the Internal State of an Asynchronous Finite Automaton with Two-Step Memory"

V sb. Vopr. sinteza konechn. avtomatov (Problems of Synthesizing Finite Automata -- collection of works), Riga, Zinatne Press, 1972, pp 21-26 (from RZh-Kibernetika, No 9, Sep 72, Abstract No 9V406)

No abstract

1/1

USSR

UDC: 519.1

PETRENKO, A. F., FRITSNOVICH, G. F.

"Synthesis of Asynchronous Finite Automata With Regard to Reducing the Number of Filters"

Avtomatika i vychisl. tekhn. (Automation and Computer Technology), 1972, No 6, pp 19-22 (from RZh-Kibernetika, No 5, May 73, abstract No 5V548 by the authors)

Translation: The paper deals with the possibilities of reducing the total number of filters necessary for eliminating dangerous competitions in synthesizing asynchronous finite automata given by normal tables of transitions.

1/1

USSR UDC 577.4

KARYOS, V. V., and PETRENKO, A. F.

"A Coding for the State of an Asynchronous Automaton Which can be Achieved on the Basis of a Model with Two-stage Memory"

V sb. Teoriya Konech Avtomatov i Yeye Pril. (Theory of Finite Automata and its Applications--collection of works), first edition, Riga Zinatne, 1973, pp 35-46 (from RZh Matematika, No 11, Nov 73, Abstract No 11 V528)

Translation: The functioning of an asynchronous automaton with 2-stage memory is determined by the following functions of transitions and output:

$$\chi(t) = f[\rho(t), \chi(t-1), \chi(t-2)]$$

$$\lambda(t) = \phi[\rho(t), \chi(t-1), \chi(t-2)],$$

Here $\rho(t)$, $\chi(t)$, and $\lambda(t)$ are the input state, internal state, and output state of the automaton at moment t, respectively. The work suggests a method of designing the minimum length code of internal states to eliminate dangerous competition among intermediate variables in an asynchronous automaton with 2-stage memory. It is shown that the length of such a code is not greater than the length of the code for a classical model of an asynchronous automaton.

1/1

USSR

UDC: 8.74

MIKEL'SON, V. R., PETRENKO, A. E.

"Minimizing the Number of Operators in an Algorithm Scheme"

Riga, Vopr. sinteza konechn. avtomatov--sbornik (Problems of Synthesizing Finite Automata--collection of works), "Zinatne", 1972, pp 33-39 (from RZh-Kibernetika, No 10, Oct 72, abstract No 10V624 [authors' résumé])

Translation: The paper deals with the problem of minimizing the number of operators in an algorithm flowchart. The concept of incompatibility of operators and the graph of operator incompatibility are introduced. The problem of minimizing the number of operators is reduced to coloring the vertices of the graph of operator incompatibility.

1/1

1/2 021 UNCLASSIFIED PROCESSING DATE--09OCT70

TITLE--KINETICS OF THE DECARBURIZATION OF TRANSFORMER STEEL IN MOISTENED NITROGEN HYDROGEN MIXTURES -U-

AUTHOR-(04)-TOMILIN, I.A., BORISENKO, V.G., PETRENKO, A.G., SHVARTSMAN, L.A.

COUNTRY OF INFO--USSR

SOURCE--ZV. AKAD. NAUK SSSR, SER. FIZ. 1970, 34(2), 329-32

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--TRANSFORMER STEEL, NITROGEN, HYDROGEN, COLD ROLLING, SILICON STEEL, METAL DECARBURIZATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1995/0178 STEP NO--UR/0048/70/034/002/0329/0332

CIRC ACCESSION NO--AP0115882

UNCLASSIFIED

2/2 021 UNCLASSIFIED PROCESSING DATE--09OCT70

CIRC ACCESSION NO--AP0115882

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. TESTS WERE MADE ON THE CHANGE OF C CONCN. AFTER TEMPERING THE SAMPLES OF COLD ROLLED STEEL DEPENDING ON THE TIME AND CHEM. COMPN. OF THE GAS. THE INITIAL C CONTENT IN STEEL WAS 0.045PERCENT. THE GAS STREAM FLOW RATE WAS SIMILAR TO 4 M PER MIN. THE C CONCN. WAS DETD. BY CHEM. METHODS. DURING EXPTS. A CONST. CONCN. OF H SUB2 (15PERCENT) WAS MAINTAINED, CHANGING, HOWEVER, THE RATIO RHO SUBH2-RHO SUBH2O FROM 10 TO 1.5. THE RATE OF DECARBURIZATION INCREASED WITH INCREASE OF MOISTURE CONTENT IN THE MIXT. THE REACTION RATE WAS RATHER LOW COMPARED TO THE RATE OF DIFFUSION. FACILITY: INST. METALLOVED. FIZ. METAL., MOSCOW, USSR.

UNCLASSIFIED

1/2 .050 UNCLASSIFIED PROCESSING DATE--18SEP70

TITLE--BEHAVIOR OF HEAT RESISTANT ELECTRIC INSULATING COATINGS DURING THE EXTENSION AND BENDING OF TRANSFORMER STEEL -U-

AUTHOR-(04)-KUDRYAVTSEV, V.V., PETRENKO, A.G., ANDREYEV, V.L., BORISENKO, V.G.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, SER. FIZ. 1970, 34(2), 310-16

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--HEAT RESISTANT MATERIAL, TRANSFORMER STEEL, PROTECTIVE COATING, ELECTRIC INSULATION, PHOSPHATE, MAGNESIUM COMPOUND, BENDING STRENGTH/(U)KARLIT PROTECTIVE COATING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1988/0556 STEP NO--UR/0048/70/034/002/0310/0316

CIRC ACCESSION NO--AP0105541

UNCLASSIFIED

2/2 . 050 UNCLASSIFIED PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0105541

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AT THE STRAIGHTENING ANNEALING TEMPERATURE OF COILED TRANSFORMER STEEL (700-850DEGREES), MG PHOSPHATE COATING APPLIED ON AN INTERMEDIATE MG SILICATE SUBSTRATE (2 LAYER COATING) DOES NOT UNDERGO VISIBLE FAILURES AT 2-6PERCENT EXTENSION. COATING OF THE "KARLIT" TYPE ACQUIRES SUFFICIENT ELASTICITY ONLY AT 900DEGREES AND DOES NOT FAIL AT 6PERCENT DEFORMATION. MG PHOSPHATE COATING, WITHOUT AN INTERMEDIATE COATING DOES NOT ENSURE SUFFICIENT PROTECTION OF THE STEEL AGAINST OXION. AT 700-850DEGREES WITHOUT A PROTECTIVE ATM. AND FAILS AT A RELATIVE ELONGATION OF 2-9PERCENT AND 700-800DEGREES. IN BENDING, VISIBLE DETERIORATION OF THE COATING ON THE INSIDE SURFACE OF THE BENDING SPECIMEN STARTS EARLIER IN ALL CASES, FOR GREATER RADI OF CURVATURE. THE STABILITY OF THE COATING DEPENDS, TO A GREAT DEGREE, ON THE PROPERTIES OF THE METAL, THICKNESS AND NATURE OF COATING, AND A NO. OF OTHER FACTORS. THE 2 LAYER COATING ON METAL WITH LARGE AND MEDIUM GRAIN AS WELL AS ON METAL WITH CLASS 10 CLEAN SURFACE DID NOT SEP. ON THE EXTERNAL SIDE OF THE BENDING SPECIMENS DOWN TO MIN. RADII OF BEND TESTS OF 5 AND 10 MM.

UNCLASSIFIED

Miscellaneous

USSR

TOMILIN, I. A., BORISENKO, V. G., PETRENKO, G. and SHVARTSMAN, L. A., Institute of Metallography and Physics of Metals, Institute of Precision Alloys, Central Scientific Research Institute of Ferrous Metallurgy imeni I. P. Bardin

"Study of Decarbonization Kinetics of Transformer Steel in Moist Nitrogen-Hydrogen Media"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Fizicheskaya, Vol. 34, No. 2, Feb 70, pp 329-332

Abstract: Factors determining the rate of decarbonization of transformer steel annealed in moist nitrogen-hydrogen media through the reactions

$$C + H_2O \text{ (gas)} = CO \text{ (gas)} + H_2 \text{ (gas)} \quad (1)$$

$$C + 2H_2 \text{ (gas)} = CH_4 \text{ (gas)} \quad (2)$$

were studied. Decarbonization kinetics were determined as a function of the hydrogen and water vapor content at 800°C. The decarbonization reaction took place in a mixed diffusion-kinetic mode. The reaction rate in these limits is described by a diffusion equation with third-order boundary conditions. The decarbonization rate was determined by the Biot number, which increases as the water vapor content in the gas increases, and it was found that the process goes

Card 1/2

USSR

TOMILIN, I. A., et al, Izvestiya Akademii nauk SSSR, Seriya fizicheskaya, Vol. 34, No. 2, Feb 70, pp 329-332

into the diffusion region for 8-10% H_2O by volume. Since the Biot number increases with the water vapor concentration and is independent of hydrogen content, carbon oxidation through reaction (1) is irreversible and the rate of the process is not slowed by increasing the concentration of hydrogen, which is a reaction product.

Card 2/2

USSR UDC 621.372.061

SIGORSKIY, V. P., Doctor of Technical Sciences, PETRENKO, A. I., Doctor of Technical Sciences, DENBNOVETSKIY, S. V., Candidate of Technical Sciences, TSURIN, O. F., Candidate of Technical Sciences, KOLESNIK, A. A.

"Experimental System for Operator-BESM-3M Computer Interaction"

Kiev, Mekhanizatsiya i Avtomatizatsiya Upravleniya, No 1, Jan/Feb 72, pp 24-26

Abstract: A brief description of an experimental model for a system for the graphical interaction between an operator and the BESM-3M computer is given. The model was developed at Kiev Polytechnical Institute and is currently being tested at the Scientific Research Institute of Automated Systems for Planning and Control in Construction (Kiev). The designation and characteristics of units in the experimental model are described, including a block diagram of the system and a diagram of the structure of words used in constructing graphical information. The controlling word switches on individual units of the machine such as the light pencil and the rotation unit. The control word can also give an image recorded in the memory of the machine to which a 21-32 bit word corresponds and can also organize a ring structure for the construction of complex images.
1/2

USSR

SIGORSKIY, V. P., et al., Mekhanizatsiya i Avtomatizatsiya Upravleniya, No 1, Jan/Feb 72, pp 24-26

If the image is recorded by a method invariant to the position on the screen of the indicator device in the data bank to which the transfer in processing the controlling word is made, multiplication of a given image without additional losses is possible and the given structural data bank can be represented as a symbol in the character generator. An image is regenerated by periodic interrogation of the magnetic memory of the BESM-3M with a frequency of 33 Hz. The raw data for images is stored in 1000 locations of the working storage. Digital portions of the operation are carried out on logical elements of the MIR-1 complex.

2/2

USSR

UDC 681.327.12

BUDNYAK, A. A., OSMOLOVSKIY, YU. F., PETRENKO, A. I., SAKUN, V. A., FESECHKO, V. A., Kiev "Order of Lenin" Polytechnical Institute imeni the Fiftieth Anniversary of the October Revolution

"A Color-Recognition Device"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 4, 1970, p 103, patent No 260983, filed 17 Nov 67

Abstract: This Author's Certificate introduces a color-recognition device based on patent No 219923. As a distinguishing feature of the patent, the speed of the device is increased and its overall size is reduced by making the radiation photoreceiver in the form of an electromagnetic electron stream commutation system with three sections in the photocathode of the photomultiplier. This system consists of three electromagnets with optical filters between their poles. These electromagnets are connected through bidirectional switches to a ring commutator which alternates the direction of the magnetic fluxes in the electromagnets. This commutator connects the reference phase of the voltage to a phase meter.
1/1

USSR

UDC: 681.327.11

DENBNOVETSKIY, S. V., LESKIN, V. F., MEDVEDENKO, B. I., SEMENOV, G. F., SIGORSKIY, V. P., TSYGANOK, B. A., PETRENKO, A. I., Kiev "Order of Lenin" Polytechnical Institute imeni the Fiftieth Anniversary of the Great October Socialist Revolution

"A Device for Mapping Information"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 10, Apr 72, Author's Certificate No 332455, Division G, filed 22 May 70, published 14 Mar 72, p 193

Translation: This Author's Certificate introduces a device for mapping information. The device contains a cathode ray tube with deflecting system, and amplifiers. As a distinguishing feature of the patent, the clarity and contrast of the reproduction are improved by adding a deflecting micro-coil placed in the throat of the CRT and connected through a shaper amplifier to the output of the video amplifier.

USSR

UDC 681.327.12

DENBNOVETSKIY, S. V., ZABOROVSKIY, YU. A., PETRENKO, A. I., SKRYNSKIY, N. YA.

"Method of Reading Two-Dimensional Graphs"

USSR Author's Certificate No 310274, filed 12 May 69, published 3 Sep 71 (from RZh --Avtomatika, Telemekhanika i vychislitel'naya tekhnika, No 4, Apr 72, Abstract No 4A525P)

Translation: A procedure is proposed for reading two-dimensional graphs by swinging the beam in a circular trajectory. In order to increase the reliability when reading the graphs with internal and external loops, the time interval of the tracking resolution is generated in each circular scanning cycle. This interval is centered symmetrically with respect to the reading direction, and on coincidence of the middle of the time interval of the resolution with the direction of reading, the center of the circular scan of the beam is advanced along the reading direction by one step. There are 2 illustrations.

1/1

USSR

UDC 681.327.12

DENBNOVETSKIY, S. V., ZABOROVSKIY, Yu. A., PETRENKO, A. I., SKRYNSKIY, N. Ya., Kiev Polytechnical Institute

"A Method of Reading out Two-Dimensional Graphs"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No 23, Aug 71, Author's Certificate No 310274, Division G, filed 12 May 69, published 26 Jul 71, p 158

Translation: This Author's Certificate introduces a device for reading out two-dimensional graphs by turning a beam in a circular trajectory. As a distinguishing feature of the patent, in order to improve reliability in reading out graphs with inside and outside loops, the time interval of tracking resolution is isolated on each cycle of the circular scan, this interval is symmetrically centered relative to the direction of readout, and the center of circular beam scanning is moved one step in the direction of readout when the middle of the time resolution interval coincides with the readout direction.

1/1

USSR

UDC 621.372.0.61

SIGORSKIY, V. P., PETRENKO, A. I., SLIPCHENKO, V. G.

"Algorithm and Program for Setting up Equations of State for a Circuit With Optimum Subdivision of Mutually Defined Branches of the Circuit Graph"

Avtomatiz. proyektir. v elektron. Resp. mezhved. nauch.-tekhn. sb. (Design Automation in Electronics. Republic Interdepartmental Scientific and Technical Collection), vyp. 2, Kiev, "Tekhnika", 1970, pp 52-68

Abstract: The authors consider a universal algorithm for setting up equations of state for an electronic circuit using a mixed coordinate basis. The algorithm is suitable for analyzing linear and nonlinear continuous and discrete circuits with dependent sources. The program enables derivation of an equation of state in the form of a system of first-order differential equations. One table, four illustrations, bibliography of four titles.

1/1

USSR UDC 621.372.0.61

SIGORSKIY, V. P., PETRENKO, A. I.

"Theoretical Principles of Mathematical Modeling of Electronic Circuits"

Avtomatiz. proyektir. v elektron. Resp. mezhved. nauch.-tekhn. sb. (Design Automation in Electronics. Republic Interdepartmental Scientific and Technical Collection), vyp. 2, Kiev, "Tekhnika", 1970, pp 3-11

Abstract: Procedures are outlined for deriving circuit equations on the basis of component and topological equations in various systems of coordinates. Equations in a nonhomogeneous coordinate basis with the minimum possible number of variables are derived on the basis of phenomena of degeneration of coordinates. Problems involved in the derivation of equations of state in normal form are considered. Bibliography of 23 titles.

1/1

USSR

UDC 621.372.061

PETRENKO, A. I., SLIPCHENKO, V. G.

"Program for Compiling the Equations of State of Electronic Circuits"

Avtomatiz. proyektir. v elektronike. Resp. mezhved. nauchno-tekhn. sb. (Automation of Design in Electronics. Republic Interdepartmental Scientific and Technical Collection), 1970, vyp. 1, pp 116-123 (from RZh-Radiotekhnika, No 4, Apr 71, Abstract No 4A108)

Translation: A program for compilationof the equations of state of electronic circuits executed on a digital computer is described. The application of the method of variable states using a mixed coordinate base is explained by its universality and suitability for analysis of linear and nonlinear analog and digital circuits and systems both in the field of electronics and in the field of automatic control. There are 4 illustrations, 1 table and an 11-entry bibliography.

1/1

USSR UDC 681.327

OMELIN, V. M., OKHOTIN, S. N., ROMANOV, V. V., Engineers, PETRENKO, A. I., Doctor of Technical Sciences, FESECHKO, V. A., Candidate of Technical Sciences

"All-Purpose Graphical Data Input Device for a Digital Computer"

Moscow, Pribory i Sistemy Upravleniya, No 2, February 1971, pp 6-7

Abstract: A graphical data conversion device designed for converting graphical documents to code has been developed at the All-Union Scientific Research Institute of Exploration Geophysics jointly with the Department of Technical Electronics of Kiev Polytechnical Institute. Its technical parameters make it possible to read a variety of graphical data including single curves, families of curves, and various sets of outlines. A block diagram of the device, its operating time diagram, data allocation in memory, and basic technical specifications of the device are presented. It is pointed out that in contrast to the Luch and Grafik graphical data input devices based on the same principle of color recognition, the present design achieves parallel color recognition so that it can read six colors simultaneously -- black, red, blue, green, yellow, and one other arbitrary color. The basic units of the device are an electromechanical scanner with an optical system and tape drive, a video pulse shaper,

1/1

USSR

OMELIN, V.M., et al., Pribory i Sistemy Upravleniya, No 2, February 1971, pp 6-7

a color separating unit, encoding and output units, and a monitoring and control unit.

2/2

USSR

UDC 681.3

SIGORSKIY, V. P., PETRENKO, A. I.

"Algorithms for Analysis of Electronic Circuits"

Algoritmy Analiza Elektronnykh Skhem, [English Version Above], Kiev, Tekhnika Press, 1970, 394 pages, (Translated from Referativnyy Zhurnal Kibernetika, No 5, 1971, Abstract No. 5V601 K, unsigned).

Translation: Algorithms for analysis of linear and non-linear electronic circuits, both transistor and tube type, are presented. The principles of matrix-topological description of circuits are studied, as well as models of electronic components for small and large signals, algorithms for formation of equations of state of circuits in normal form and calculation of circuit functions, analysis of circuit functions in the frequency-time area and solution of equations of state in general form or by numerical methods, algorithms for estimating the sensitivity and stability of circuits to changes of individual components, determination of tolerances and tuning (optimization) of circuits.

1/1

USSR UDC 539.4

PETRENKO, A. I., Kiev

"Method of Determining Load-Bearing Capacity of Gas Turbine Blades Under Conditions of Thermal Cycling and Vibration"

Kiev, Problemy Prochnosti, No 5, May, 1971, pp 65-69.

Abstract: The method of integral equations is used to establish the dependence between the amplitude of forced oscillations of the end cross section of a blade and the vibration bending stresses in various cross sections of the blade, considering changes in modulus of elasticity and bending angle through the height of the blade. A mathematical experimental model is produced on the basis of the conception of the multifactor experiment for the specific case in question.

1/1

USSR

UDC 621.373.544(088.8)

PETRENKO, B. I., KORNEYEVA, T. V.

"Dynamic Trigger"

USSR Author's Certificate No 250987, Filed 27 Oct 66, Published 30 Jan 70 (from RZh-Radiotekhnika, No 9, Sep 70, Abstract No 9G270P)

Translation: This author's certificate introduces a dynamic trigger executed according to the circuit of a transistorized blocking generator included by a circuit with a common emitter containing a time delay capacitor, a semiconductor diode for feeding control pulses and a decoupling resistance-capacitance circuit in the collector circuit. In order to obtain static output and use the capacitor of the resistance-capacitance circuit as a storage element, the capacitor is connected via a clamping semiconductor diode to an auxiliary power supply.

1/1

1/2 012 UNCLASSIFIED PROCESSING DATE--090CT70

TITLE--HYGROSCOPIC NATURE, CAKING TENDENCY, AND DEGREE OF DISPERSION OF AMMONIUM SULFATE -U-

AUTHOR-(03)-PETRENKO, D.S., STUCHKOV, G.S., NELIPA, O.G.

COUNTRY OF INFO--USSR

SOURCE--KHIM. PROM. UKR. 1970, (1), P 13

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--AMMONIUM SULFATE, CRYSTAL STRUCTURE, HYGROSCOPIC WATER, PROTECTIVE PACKAGING, WATERPROOF PACKAGING MATERIAL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1990/1459 STEP NO--UR/0436/70/000/001/0013/0013

CIRC ACCESSION NO--AP0109519

UNCLASSIFIED

2/2 012 UNCLASSIFIED PROCESSING DATE--09OCT70

CIRC ACCESSION NO--AP0109519

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE RELATION OF THE CAKING TENDENCY TO THE DEGREE OF DISPERSION OF (NH SUB4) SUB2 SO SUB4 WAS DETD. THE GRANULAR FORM IS PREFERRED TO THE CRYST. THE CAKING TENDENCY INCREASES WITH THE FINENESS OF (NH SUB4) SUB2 SO SUB4. WHEN STORED FOR 33-63 DAYS IN MOISTURE PROOF SACKS THE DISPERSIVITY OF (NH SUB4) SUB2 SO SUB4 WAS NOT IMPAIRED. SINCE THE AGROPHYS. PROPERTIES OF (NH SUB4) SUB2 SO SUB4 DEPEND SO MUCH ON THE MOISTURE CONTENT, IT IS RECOMMENDED THAT THE MOISTURE CONTENT SHALL NOT EXCEED 0.3PERCENT AND THE AMT. OF FREE ACID SHOULD BE BELOW 0.04PERCENT. A HIGHER AMT. OF ACID ENHANCES THE HYGROSCOPIC PROPERTY OF (NH SUB4) SUB2 SO SUB4 CONSIDERABLY AND MAKES IT MORE DIFFICULT TO HANDLE.

UNCLASSIFIED

Acc. Nr: AP0040958 Abstracting Service: CHEMICAL ABST. 4/70 Ref. Code: UR0068

P

80828a Drying and handling ammonium sulfate in a vibrating fluidized bed. Petrenko, D. S.; Bartoshevich, V. I. (Kiev. Filial GNIIKhP, Kiev, USSR). *Koks Khim.* 1970, (1), 44-6 (Russ). The effectiveness of using the vibrating fluidized-bed technique in drying (from 3-4% to 0.1% humidity) of $(NH_4)_2SO_4$ (I) was investigated by means of an exptl. app. having a productivity of 60 kg/hr I. The app. is described in detail. The construction of the app. permits variation of various mech. and technological parameters, e.g., duration of the process, intensity of vibrating fluidization, etc. The optimal dynamic parameters were detd. This technique greatly improves the coeff. of heat transfer and accelerates the process 1.6 times. The drying process described can be easily modeled and automated.

I. Haiduc

ALS

1/1

REEL/FRAME
19750697

1/2 016 UNCLASSIFIED PROCESSING DATE--04DEC70

TITLE--ORDERING OF THE NICKEL,IRON,COBALT ALLOYS IN THE GAMMA REGION -U-

AUTHOR-(04)-GOMANKOV, V.I., PUZEY, I.M., MALTSEV, E.I., PETRENKO, E.D.

COUNTRY OF INFO--USSR

SOURCE--FIZIKA METALLOV I METALLOVEDENIE, FEB. 1970, 29, (2), 429-431

DATE PUBLISHED----FEB70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--ORDERED ALLOY, ALLOY PHASE COMPOSITION, NEUTRON DIFFRACTION, COBALT CONTAINING ALLOY, IRON NICKEL ALLOY, ALLOY COMPOSITION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3003/0345 STEP NO--UR/0126/70/029/002/0429/0431

CIRC ACCESSION NO--AP0129577

UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--04DEC70

2/2 016

CIRC ACCESSION NO--AP0129577

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE CHARACTERISTICS OF THE ORDERING PROCESS IN ALLOYS IN THE GAMMA REGION OF THE NI-FE-CO SYSTEM WERE STUDIED BY NEUTRON DIFFRACTION, WITH SPECIAL REF. TO THE SPECIFIC PART PLAYED BY CO IN THIS PROCESS. THE ORDERING CHARACTERISTICS ARE LARGELY DETERMINED BY THE DEVELOPMENT OF A SUPERSTRUCTURE OF THE NI SUB3 FE TYPE; THE ADDITION OF CO TENDS TO DISRUPT THIS SUPERSTRUCTURE BECAUSE THERE IS A STRONGER INTERACTION BETWEEN THE FE AND CO THAN BETWEEN THE FE AND NI.

UNCLASSIFIED

1/2 017 UNCLASSIFIED PROCESSING DATE--11DEC70

TITLE--USE OF ALTERNATING CURRENT DURING THE PREPARATION OF METAL SALTS. II. THE A.C. ELECTROCHEMICAL DISSOLUTION OF NICKEL IN HYDROCHLORIC ACID

AUTHOR-(03)-RYAZANOV, A.I., PETRENKO, G.D., OSMANOVA, YE.G.

COUNTRY OF INFO--USSR

SOURCE--ZH. PRIKL. KHIM. (LENINGRAD) 1970, 43(4), 836-42

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY, MATERIALS

TOPIC TAGS--INORGANIC SALT, CHEMICAL SYNTHESIS, ELECTRIC FIELD EFFECT, HYDROCHLORIC ACID, SOLUBILITY, CHEMICAL REACTION RATE, OXALIC ACID, NICKEL CHLORIDE, ALTERNATING CURRENT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3004/0967 STEP NO--UR/0080/70/043/004/0836/0842

CIRC ACCESSION NO--AP0131552

UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--11DEC70

2/2 017

CIRC ACCESSION NO--AP0131552

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE USE OF A.C. (50 HZ) FOR DISSOLVING NI (MARK N,0 OR N,1) IN HCL WAS STUDIED AS A FUNCTION OF ACID CONCN. AND C. D. THE OPTIMUM ACID CONCN. WAS 4-6N. THE SOL. OF NICL SUB2 DECREASED AS THE ACID CONCN. INCREASED. OXALIC ACID INCREASED THE RATE OF DISSOLN. (AT HCL CONCN. OF 4-6N) BY CONVERTING NICL SUB2 TO NI OXALATE AND HCL. DURING 1 COMPLETE A.C. CYCLE, 4 ELECTRODE PROCESSES CAN OCCUR, 2 ANODIC AND 2 CATHODIC. FOR DISSOLN. TO OCCUR, THE EFFICIENCY OF THE ANODIC DISSOLN. PROCESS MUST BE GREATER THAN THE EFFICIENCY OF THE CATHODIC DEPOSITION PROCESS.

UNCLASSIFIED

1/2 010 UNCLASSIFIED PROCESSING DATE--02OCT70

TITLE--SYNTHESIS OF 3,5,DICHLOROACENAPHTHENE -U-

AUTHOR-(02)-PETRENKO, G.P., USACHENKO, V.G.

COUNTRY OF INFO--USSR

SOURCE--ZH. ORG. KHIM. 1970, 6(3) 590-2

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CHEMICAL SYNTHESIS, CHLORINATED AROMATIC COMPOUND, DIAZOTIZATION, OXIDATION, NAPHTHENE, BROMINATED ORGANIC COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1992/1402 STEP NO--UR/0366/70/006/003/0590/0592

CIRC ACCESSION NO--AP0112403

UNCLASSIFIED

2/2 010 UNCLASSIFIED PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AP0112403

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. NITRATION OF 5,CHLOROACENAPHTHENE (I) GAVE ITS 3,NITRO-DERIV., WHICH WAS REDUCED TO THE 3,AMINO DERIV. DIAZOTIZATION OF THIS, FOLLOWED BY REACTION WITH ZNCL SUB2 IN DIL. HCL SOLN. GAVE THE TITLE COMPD. (I). OXIDN. OF I WITH CRO SUB3-AC SUB2 O GAVE 2,4,DICHLORONAPHTHOIC ANHYDRIDE (II). CATALYTIC VAPOR PHASE OXIDN. OF I WITH AIR AT 480DEGREES GAVE 3,5,DICHLOROACENAPHTHYLENE, WHICH WAS OXIDIZED WITH CRO SUB3-AC SUB2 O TO II, CHLORINATED TO THE 1,2,DI-CL DERIV. OF III, AND BROMINATED TO THE 1,2,DI-BR DERIV. OF III.

UNCLASSIFIED

USSR

UDC 669.017:537+535

MEL'NIKOV, N. A., PAKCHANIN, L. M., and PETRENKO, P. V., Kiev State University

"Study of Recovery Processes in a Ni-20% Cr Alloy"

Kiev, Metallofizika, No 40, 1972, pp 78-84

Abstract: The effect of various defects on close ordering processes was studied. An investigation of the relationship of residual electrical resistance to quench temperature after isochronous annealing of the alloys was conducted after the latter were subjected to various treatments. The blocks of coherent scattering, microdistortions, and dynamic and static distortions of the alloy were measured. It was shown that the residual electrical resistance depends essentially on the initial state of the alloy. In the temperature region of -196 to -90°C, recovery is accompanied by a drop of electrical resistance which at a higher temperature varies by growth. The results obtained are explained by migration of the different defects leading to close ordering. 5 figures, 21 bibliographic references.

1/1

Byelorussian SSR

UDC 621.73.043

SEVERDENKO, V. P., PETRENKO, V. V., and PETRENKO, S. I.

"On the Dimensions of Mosaic Units in Steel Types 20 and Kh18N10T after Ultrasonic Working"

Minsk, Vestsi Akademii Navuk BSSR, Series on Physical-Technical Sciences, No 2, 1973, pp 14 - 16

Abstract: The authors deformed samples of No 20 low-carbon steel and Kh18N10T stainless steel with dimensions of 6 x 9 millimeters in a 5-ton press, both without the application of ultrasonics and with ultrasonics at a natural resonant frequency of 19 kilohertz and intensities of 50, 650, and 700 watts per square centimeter. X-ray methods were then used to determine the dimensions of mosaic units in the centers of the samples. As expected, the dimensions of these units decreased with increasing deformation. However, the decreases were less as greater amounts of ultrasonic energy were applied. There was also a significant decrease in the crystal lattice defects of the alloys subjected to ultrasonic energy, which the authors believe reflects the fact that the groups of atoms moving in the deformation process have linear dimensions smaller than the dimensions of the mosaic units, so that there is less elastic deformation of volume elements when obstructions are encountered.

1/1

USSR UDC 548.4

SEVERENKO, V. P., GURSKIY, L. I., and PETRENKO, S. I.

"examination of a Polycrystal Aluminum Surface Deformed by Ultrasound"

Minsk, Doklady Akademii Nauk BSSR, Vol 15, No 4, 1971, pp 312-315

Abstract: This article is a study of the deformation of the surface of samples of polycrustal aluminum in the region of maximum cyclic stress following exposure to ultrasound. The samples were subjected to repeated cycles of 60 seconds of exposure to ultrasound oscillations plus 120 seconds of rest until they broke (approximately 2.2 x 10^7 cycles). After observing the development of slip bands with the aid of an optical microscope, the authors conjecture that the formation and expansion of the bands results from repeated cross slipping of screw dislocations. Subsequent examination of the samples with an electron microscope revealed the step-by-step nature of the distribution of dislocations, which confirms the conjecture. The authors conclude that exposure to individual microvolumes of polycrystal aluminum to cyclic stress from ultrasound frequencies causes plastic deformation of the aluminum.

1/1

USSR

UDC 548.4

SEVERDENKO, V. P., Academician, Academy of Sciences BSSR, GURSKIY, L. I., and PETRENKO, S. I.

"Change in the Dislocation Structure of a Metal Acted on by Ultrasound"

Minsk, Doklady Akademii Nauk BSSR, Vol 14, No 12, 1970, pp 1082-1085

Abstract: Although there are numerous papers concerned with the influence of ultrasound on the physico-mechanical properties of metals and alloys, there are very few concerned with the effect of ultrasound from the kilohertz frequency range on the dislocation structure of metals. Available data are mainly concerned with studying changes in the dislocation structure of metals.

This article seeks to correct this by looking at the influence of intense ultrasound on the dislocation structure and shift in grain boundaries in samples of polycrystalline aluminum.

Two figures are given for visual presentation.

1/2

USSR

SEVERDENKO, V. P., et al., Doklady Akademii Nauk BSSR, Vol 14, No 12, 1970, pp 1082-1085

It is found that certain changes in the dislocation structure of Al indicate that the ultrasonic energy is absorbed on the crystal lattice defects, outwardly manifested by heating of the sample.

The studies here also show that as a result of absorption of ultrasonic energy, the dislocation structure undergoes substantial restructuring, leading to a decrease in the free energy of the system; and the process of self-diffusion is accelerated and accompanied by disappearance or shift in the grain boundaries.

2/2

1/2 037 UNCLASSIFIED PROCESSING DATE--02OCT70

TITLE--INHIBITION OF MARTENSITIC TRANSFORMATION IN STEEL KH18N10T DURING PLASTIC DEFORMATION WITH SUPERIMPOSED ULTRASONIC VIBRATIONS -U-

AUTHOR-(03)-SEVERDENKO, V.P., PETRENKO, V.V., PETRENKO, S.I.

COUNTRY OF INFO--USSR

SOURCE--DOKL. AKAD. NAUK BELORUSS. SSR 1970, 14(2), 122-4

DATE PUBLISHED-------70

SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR, MATERIALS

TOPIC TAGS--PLASTIC DEFORMATION, STAINLESS STEEL, ULTRASONIC VIBRATION, ALLOY DESIGNATION, MARTENSITIL TRANSFORMATION, METALLOGRAPHY, MAGNETIC SATURATION, FERROMAGNETISM/(U)KH18N10T STAINLESS STEEL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1990/0224 STEP NO--UR/0250/70/014/002/0122/0124

CIRC ACCESSION NO--AT0108548

UNCLASSIFIED

2/2 037 UNCLASSIFIED PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AT0108548

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IN SAMPLES OF STEEL KH18N10T DEFORMED WITH SUPERIMPOSED ULTRASONIC VIBRATION, THE MAGNETIC SATN. CURVE IS ALMOST INDEPENDENT OF THE DEGREE OF STRAIN WHICH PROVES THE ABSENCE OF THE FORMATION OF LARGE AMTS. OF FERROMAGNETIC ALPHA-PHASE IN THE DEFORMED STEEL. THIS IS EXPLAINED BY HIGHER TEMPS. IN THE DEFORMATION WITH SUPERIMPOSED ULTRASOUND. AT THESE TEMPS. THE MARTENSITIC TRANSFORMATION IS SUPPRESSED. THIS WAS CONFIRMED BY THE METALLOGRAPHIC EXAMN. OF POLISHED SAMPLES DEFORMED WITH AND WITHOUT ULTRASONIC VIBRATIONS.

UNCLASSIFIED